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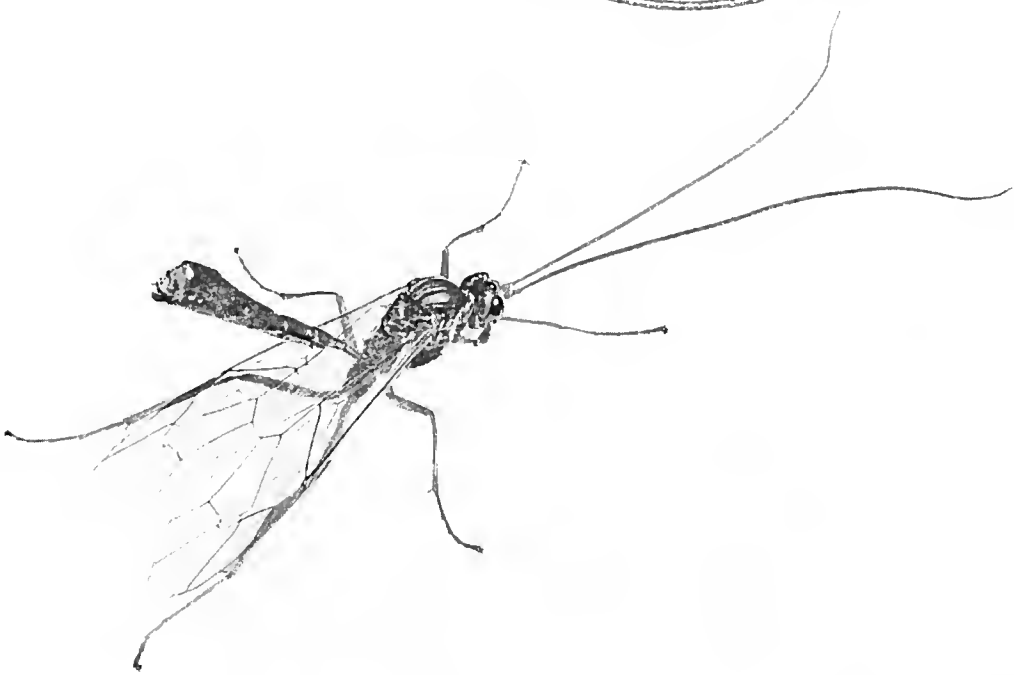


News Bulletin of The Entomological Society of Victoria Inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)

MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

(a) to stimulate the scientific study and discussion of all aspects of entomology,
(b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
(c) to compile a comprehensive list of all Victorian insect species,
(d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at the 'Discovery Centre', Lower Ground Floor, Museum Victoria, Carlton Gardens, Melway reference Map 43 K5 at 8 p.m. on the third Tuesday of even months, with the exception of the December meeting which is held on the second Tuesday. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

SUBSCRIPTIONS (2010)

Ordinary Member	$30 (overseas members $32)
Country Member	$26 (Over 100 km from GPO Melbourne)
Student Member	$18
Electronic (only)	$20
Associate Member	$ 7 (No News Bulletin)
Institution	$35 (overseas Institutions $40)

Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

LIFE MEMBERS: P. Carwardine, Dr. R. Field, D. Holmes, Dr. T. New, Dr. K. Walker.

Cover design by Alan Hyman.

Cover photo: ***Netelia producta***
Photographer John Tiddy is a member of the Victorian Nature Photography Group and has an interest in insects. He has produced this photo using a white background photography technique. The wasp has it's abdomen elevated due to the cold weather when it was found. An article expanding on this method of photography is included in the February 2011 bulletin.

Meeting of the Entomological Society of Victoria
14 December, 2010—Melbourne Museum Discovery Centre

Present: K. Harris, K. Dunn, L. Rogan, D. Stewart, V. Curle, S. Curle, M. Kesavan, P. Carwardine, J. Tuttle, M. Hewish, M. Endersby, I. Endersby, M. Fiedel, G. Weeks, P. Marriott, R. Best, C. Kirkpatrick, C. McPhee

Apologies: P. Lillywhite , D. Dobrosak, T.Barberi, K. Walker

Being the last meeting of the year, compounded with the technological difficulties experienced on the night, we got carried away with the events of the night and omitted to run through the formalities of the meeting.

General Business:

A number of our members had brought along items for discussion and information to share – as well as of course, some Christmassy wares J

Geoff Weeks

Geoff brought in something a little different, a Royal Doulton mug that he had recently found at a local Op Shop. It has some very nicely detailed illustrations on it from the UK. Species illustrated included Marbled White, Peacock, Monarch, Dark Green Fritillary, Small Copper, Large Blue, Brimstone, Large White, Purple Hairstreak, Swallowtail, Ringlet, Large Copper, Orange Tip, Adonis blue, Small Heath and others.

Ken Harris

Ken brought in a couple of moths – 1 to show and other images on screen.

Andrew Green, a colleague of Ken's spotted quite a small Noctuid moth (*Holocryptis phasianura*) on the window of a car under a car port in Neerim South on the 12th May 2008 and had asked Ken to identify it. He passed it to Peter Marriott who then passed it to Canberra. Their location didn't seem to match the species. On October 30th, he found the second one under the car port but this time on the laundry window.

Ken explained how they went on to try and light trap further specimens with no joy only to discover the moth turned up again the following morning at his friends. Ken showed around the specimen and images taken at May and October. The previous most southerly records for this species was Wollongong, Vic. Ken concluded with an image of an undescribed Geometridae, Larentiinae species taken in Churchill in 2008; which has also been observed at Gembrook.

Another sighting by Andrew Green, a fellow member of the Latrobe Valley Field Naturalists Club,. was the Chequered Swallowtail in his garden just north of Neerim South in Victoria on 26th November 2010. There was only the one and he did not see it for long but managed to get some photographs and he says he thinks it was a male. (photo p.4) On the same day he saw a few Caper White's in his garden, and on the following day 27th November, Caper Whites were numerous in his garden, but he has seen none apart from those two days.

Kelvyn Dunn

The conversation moved onto describing how we have seen a number of species in Victoria of late that are not normally seen here. Kelvyn explained that with the wet season that we've just had we expected a few changes. So far, Kelvyn has seen Chequered Swallowtails (*Papilio demoleus*) and a few

Lesser Wanderers (*Danans chrysippus*). Caper Whites (*Belenois java*) appear to not be so common this year where they have been fairly localised seemingly most common around Point Nepean this year.

Peter Marriott concluded that as Ken's moth species has been seen over a few generations, that perhaps it is not subject to this years climatic conditions that seem to have caused other species to move further south than they would normally do.

Given the unusually wet season, the likes of which has not been seen since 1974, the Editor encourages members to send interesting butterfly records to Kelvyn as more may be expected in the next few months. These could be compiled as a list for publication in the News Bulletin at a later date if sufficient interesting records are sent in.

Members who suspect a record of interest should send the species name, numbers./sexes encountered, exact location (include GPS if available), date of sighting, direction of flight if thought to be migrating, and observers' names to Kelvyn at his email address (kelvyn_dunn @yahoo.com).

Peter Carwardine

Peter brought along a piece of history in the form of an old insect book, a 1942 (reprinted 1944), Australian Insects by Keith C. McKeown. The publication has no colour images but lots of good quality line drawings and some black and white photographs.

Keith McKeown was born in Burwood, south eastern Sydney suburb, Nov 6th 1892. Appointed Entomological Research Officer January 1927. Assistant Entomologist at the Australian Museum June 1929 (and was still there during the war when he wrote the Australian Insect book in 1942). Other various publications in various journals such as Carpenter Bees, Malarial Mosquitoes. Keith also published a book on Australian Spiders.

Russell Best *Coincidence*

A friend of Russell's had recently been to the Central Deserts and showed Russell various spectacular pictures of the wildflowers ; especially the Swainson Peas.

Russell showed images of a species of large purple Swainson pea flower from his recent trip to Mt Arapiles (about 4 times the size of a normal pea flower). These have been identified as the Broughton Pea (*Swainsona procumbent*). The strange thing about it is the asymmetry of the flower. All of the flowers are the same. Russell explained that asymmetry in nature is really quite rare.

The following week at the local APS meeting, a lady reported seeing the same enormous pea flowers!

A week later, Anna Murphy (a threatened species officer for the local DSE) - working in the local area on rare plants, sent Russell an email with photos from her recent trip. Included in these photo's, a couple of Swainson peas were in there.

In return, Russell sent the pictures that he had and noted his observations that these flowers were asymmetrical, with the twisted keel. Also mentioning that there must be a hummingbird type thing that pollinates this thing because of the mechanics of the flower.

Anna replied relaying that the *Swainsona* twisted keel is the basis for her PHD. She is researching the pollination ecology of 3 *Swainsona's* and their reproductive systems. The upshot is, is that they are pollinated by a very large and rare bee called *T. Maximus*. And with this information, Russell received some video footage that he showed us, of this remarkable bee triggering the mechanical device and pollinating the equally remarkable flower. From hours of footage, was one 23 second clip of high speed footage showing this in action.

Apparently, the bee doesn't visit the flowers when humans are around and is very shy. There is very little reference to the species on the internet and has only been spotted on 2 plants with this being the third one.

Russell has also been experimenting with his own high speed footage running at 1000 frames a second and showed some footage of a Trigger Plant – and the Reed Bee that pollinates it (*Exoneura bicolor*).

David Stewart

In one of the earlier meetings, David showed some images some of the changes in Autumn of central Victoria / Mornington peninsular.

David's presentation started with a few photos of the area after Black Saturday. And since there has been a wonderful burst of growth. During the earlier part of the year, when the mornings were a lot colder, there were a fairly large number of deformities of the emerging Wood Whites (*Delias aganippe*) – the butterfly in the image laid 110 eggs which appear to have all been preyed upon by an unknown predator when they had emerged – which indicated that there were not many survivors from the first brood. David showed that they have had a marvellous showing of Common Fringe Myrtle. No Jewel Beetles were present this year.

David reporting to see the normal common butterflies but also Lesser Wanderers and Caper Whites.

Jim Tuttle

Jim brought along some images of the various Hawk Moth larvae.

The first were off *Synoecia marmorat;* which was last reared in 1890 and not seen since. Jim pointed out the larvae looked pretty unusual for a hawk moth. Jim had images for all instars.

The food plant was a desert species of shrub (*Eremophila mitchelli*); that didn't take too kindly to transplanting; so 3 lots of 11 hour trips each way; he was pretty glad to see them pupate!

The second species was from *Hippotion scrofa.* All instars captured and took 17 days from eggs hatching to pupating.

Marilyn Hewish

Marilyn, who's introduction was as a mad moth person, had a wonderful selection of moth species photographs and images to present to us – mainly these rare or unusual critters that you'd not normally get to see; those that are often just a first or even second recording of a species in Victoria. With the photographs, Marilyn had labelled them as to what makes them worthy of note.

From her Mallacoota expedition, they collected specimens from Coopers Creek on the 29th October 2010, which was a warm temperate rainforest area. Here they discovered *Acrodipsas cuprea* – Copper Ant Blue; and *Poecilasthena thalassias.*

On the 30th October 2010, at Genoa Peak which was described as dry Eucalypt woodland with black sheoak; they discovered the Dark Purple Azure (*Ogyris abrota*) and *Orthocrapsis leptoplasta* (new record for the state).

From here to Sandy point where the location was described as temperate next to the estuary and Marilyn showed us the image of *C. Phaedra* (a species not represented in the Melbourne Collection).

Next stop, on the 1st November 2010, was Davis Creek Beach. A heath land area where Marilyn showed us images of both *Philenora malthaca* and *Nola pymaeodes* (new species for Victoria).

The 23rd November found Marilyn at Gypsy Point – a light forest environment besides the estuary. Here, Marilyn found *Ethmia clytodoxa*.

Next Meetings:

If you are planning to attend any of these meetings; please refer to the website for any last minute amendments.

2011:			
Month	Date	Planned event	
February:	15th	General Meeting	Museum of Victoria Live Exhibits
April:	19th	AGM	Ken Harris: Madagascar
June:	21st	General meeting	Members Presentations
August:	16th	Members excursion	TBA
October:	18th	General meeting	Members presentations
December:	13th	General meeting	BBQ and moth collecting Please note, December's meeting date is second Tuesday of December to try and avoid Christmas celebrations

Council meetings are the third Tuesday on non general meeting months. Ie. March, May ,July, September, and November.

Meeting closed at 21:26 followed by Mince Pie's, cream and light refreshments.

Three sightings of *Papilio demoleus*

Left: Andrew Brown's photo from Neerim South 26/11/2010
Centre: Darren Bird's photo from SW of Ballarat 16/01/2011
Right: Linda Rogan's photo from Everard Track south of Kinglake 02/01/2011

Overview of the Butterfly Database: Part 5 –

A fresh look at longitudinal collecting trends

Kelvyn L Dunn
Email: kelvyn_dunn@yahoo.com

Introduction

This fifth part in the series examines collecting trends in Australia since the middle of the 19th century. Tallies of records and species encountered per annum (p.a.) based on the current holdings (n=146,543 records) expose the collecting intensity over that period. Moulds' (1999) chronology of the history of butterfly collecting in Australia is updated in light of this quantitative information. A new era framed by conservation legislation and a heightened public awareness of butterflies is proposed. Up until 1995 there had been a steady increase in record accumulation but over the last 15 years a decline in contributions suggests a flux in effort and coverage of the total fauna. The changed trend may be an artefact of recency, as modern records can be slow to seep into museum collections or databases, but use of contemporary literature offsets this lag. Time will show whether the current era is simply a trough in the ongoing history of butterfly work or evidence of protracted change.

16. Measures of enthusiasm: a new look at the collecting eras in Australia

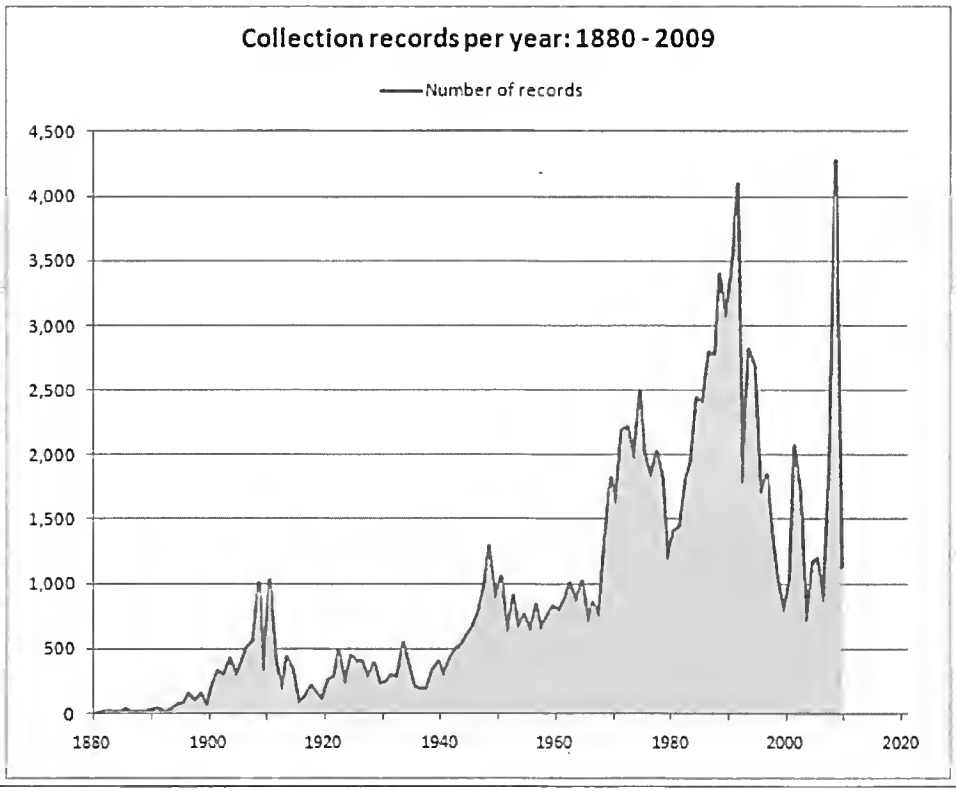
The history of the study of Australian butterflies has seen important but gradual changes in the interests of butterfly workers. Descriptions of species and amassment of extensive collections became early priorities. The 1960s onward saw an abundance of fact-gathering articles, many of which dwelt with local and regional faunal lists, life histories (descriptions of juvenile stages and identification of host plants) and changes to known distributions. The last two decades have been marked by a growth in professional research, with focus on population dynamics, ecology and conservation management. Based on these and other criteria, Moulds (1999) recognised several collecting eras across 220 years of Australian settlement. Of his seven groupings, the four most relevant to the main spread of records in the database comprise (1) 1860-1900, (2) 1900-1940, (3) 1940-1950, and (4) 1950-1980. The year of overlap in each indicated a measure of continuity. The short period after 1980 to the time of his writing – the middle 1990s – was loosely assigned to 'the future' and without crystal ball gazing, Moulds restricted his discussion to efforts up to the end of 1991.

Centralisation of the efforts of many workers nationwide has enabled solid tallies on a yearly basis. This baseline of information can be used to examine changes in accumulations in butterfly records and yearly encounter rates with the nation's fauna. These two quantitative dimensions can be considered alongside (but cannot replace) the more varied criteria used by Moulds (1999). The first of these chronologies, the number of records per annum (Fig. 6) provides a measure of the intensity of annual effort. The second, the number of species encountered per annum (Fig. 7), is a measure of the coverage of the fauna and is an inferential indicator of broader survey (and exploration). The reason being is that extensive travel is required to encounter many of the species with narrow spatial or temporal distributions in Australia. On average then, an individual's casual collecting done in recreation time, whether locally or seasonally focussed, widespread or irregular as the case may be, is very unlikely to accrue high species counts (>200), even in the richest areas of northern Queensland because some species are not easily found. For this reason the collective effort of many (rather than the few) provides substantively at the national level.

The database's holdings date from Cook's voyage of discovery on the Endeavour in 1770, but little more than a sprinkling of records exists over the subsequent decades up to the middle of the 19th century. Thereafter, a steady increase in records each year has provided for an informative, longitudinal display of the temporal spread available. Figure 6 is an update of and extension to the earlier

version published some 20 years ago in *Myrmecia* (Dunn & Dunn 1990). The original had covered a century period from 1889 to 1989 and utilised 64,100 records then available. The new version spans from 1880 to 2009 inclusively, and is enhanced by a 75% increase in the number of records. Layered upon the earlier data set, the information since added has increased the incline but the major peaks and troughs of the original remain superimposed in the update (Dunn & Dunn 1990 *cf.* Fig. 6). A spurt of records was seen soon after the turn of the 20th century but an abrupt rise of similar magnitude did not occur again until after World War II. These and the sharp peaks that arose, like a massif, between the late 1960s and late 1990s are likely due to the increased number of enthusiasts in more recent decades (Moulds 1999) and match prominent events in the history of butterfly collecting. Figure 7 presents this information in terms of species encountered and extends back a further two decades to the middle 19th century, as the Y-axis scale is more suited for the display of very low tallies. If a bell curve is fitted to this (as an extrapolation of Fig. 7), a slow decline in species encounters over the next six decades might be predicted. Such a trend, although dismal, could be realistic with further loss of habitat and the effects of predicted climate change over that time.

Figure 6. A measure of collectors' assiduousness: the numbers of records per annum from Australia over the last 130 years. (Compiled Nov. 2010, database holdings n=146,543 records).



(a) Revision of the chronology

In general, the holdings provide support for most of Moulds' (1999) chronology. However, neither Figure 6 nor the earlier 1990 version (Dunn & Dunn 1990) affirmed Moulds' third era (from 1940 to 1950), and so the recent suggestion for its expansion into the late 1960s (Dunn & Dunn 2006) is upheld. The subsequent period has been coined the 'Common & Waterhouse era' and, based on the

1990 figure, this age was then still operative in 1989 (Dunn & Dunn 2006). Information compiled since has fixed its end at 1995, whereafter a decline in collector-effort and broader survey has become apparent.

The five collecting periods (pertaining to the data set) as now revised, comprise:

1860-1901 (The historic era – main commencement of record accumulations),

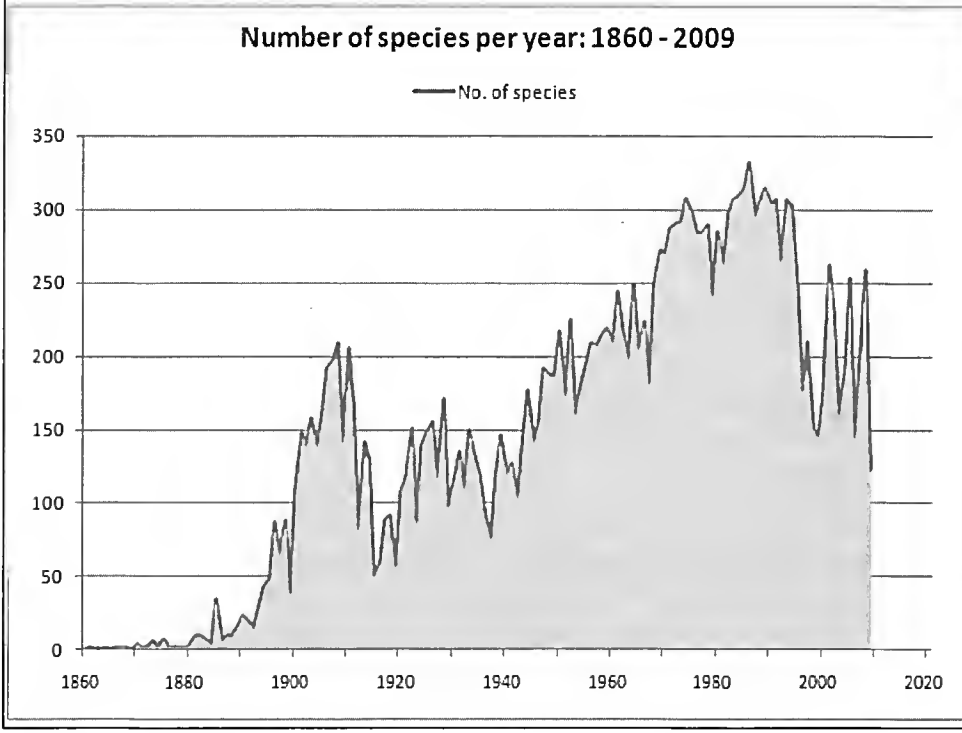
1900 to 1946 (The Waterhouse era – establishment of modern foundations for study),

1943 to 1971 (The tripartite era, denoted by the proliferation of publications by A. N. Burns, N. B. Tindale and L. E. Couchman, two of whom were museum curators),

1968 to 1995 (The Common & Waterhouse era – revival of amateur collecting interests), and

1996 onwards (The conservation era – photographers and field observers become the new fact gatherers).

Figure 7. A measure of collectors' surveillance: the number of species recorded yearly in Australia over the last 150 years (compiled from dated records of species currently recognised). (Compiled Nov. 2010, database holdings n=146,543 records).



(b) Determination of eras

A framework supported by a quantitative approach gives rigour to the original template of Moulds. The chosen divisions were anchored immediately after steep changes in record counts and where parallel changes in species' surveillance had corroborated. For numbers of records, the demarcations were initially placed where tallies changed by double increments. Namely, greater than 250, 500, 1000, and 2000 records p.a., and less than 2000 but variably greater than 1000 records p.a. in the current (fifth) era. Three consecutive scores at each new level affirmed these as times of change. The tentative divisions were then cross-compared with species encounters where numbers noticeably

incremented (using the same criteria of three consecutive scores) from greater than 100, 150, 250, and 300 species p.a., and upon decline to less than 250 species but more than 150 p.a. in the fifth era. Using this approach the intervals (years) of change across the two data sets were juxtaposed as 'a best fit' arrangement to finetune the starts and ends of Moulds' eras, and to contract or expand these broadly where needed to match with the data sets. A 'best fit' means that some overlap must exist during those years of transition, as noticeable between the second and third eras, where up to four years blurs the boundary.

(c) An overview of history

Influential factors relating to the defined periods are expanded upon below. The history draws from both Moulds (1999) and the database holdings as the fortifying basis.

1860 to 1901 (The historic era),

Attrition of collection holdings from this and earlier periods has been an ongoing problem. Under 19th century conditions in Australia it was not surprising that some valuable specimens quickly deteriorated, and others in private hands were misplaced or got lost over time. Fortuitously or not, many older collections or parts thereof were sold to dealers or exchanged with collectors living overseas. A portion found its way into offshore museums but some may have ceased to exist during war when one or more major collections, such as the Polish Museum of Zoology (Adamczewski 1946), were lost to science. The literature is sparse in terms of citations of 19th century specimens held overseas. Their inaccessibility to many early workers based in Australia, save those in museums in the UK (Waterhouse 1937) is explanatory. Complicities aside, based on 1,458 specimen and literature records in the database, bearing dates between 1860 and 1901 inclusively, the trends reveal a slowly rising number of records (Fig. 6) and accelerating encounter rate with the fauna (Fig. 7). Essentially, the available holdings align well with Moulds' template.

1900 to 1946 (The Waterhouse era),

The Waterhouse era, named in honour of this Australian worker's prolific collecting efforts and notable contributions (Moulds 1999), displayed a major peak in records in the lead up to the publication in 1914 of his jointly authored synoptic monograph, *Butterflies of Australia*. A decline in tallies followed for the period of World War I (1914-1918). A long term rising trend began in about 1920, but initially tallies remained moderately steadied (at below 500 records p.a.) over the next two decades. There was no clear effect of the Depression years on the accumulations during the 1930s (Fig. 6). Species encounters were bimodal in this period (Figure 7). The Waterhouse's era closed soon after his final paper on Australian butterflies was published in 1942 (Moulds 1977).

1943 to 1971 (The tripartite era)

Waterhouse's monumental series of works had provided future workers with a taxonomic foundation. This motivated others to study the fauna, equipped with the several illustrated textbooks then available and an array of publications to glean from. The three subsequent workers of influence were Alexander Burns (1899-1994), Leonard Couchman (1901-1992) and Norman Tindale AO (1900-1993). Today, the outstanding collections of both Burns and Couchman enhance museum holdings and wealthily inform on species' distributions during that era. A raised plateau of records (steadied at above 500 p.a.) which arose in the middle 1940s (Fig. 6) marked this era as discrete. Post-war affluence encouraged much exchange of specimens among the growing number of collectors, many of which came from classic sites. It also financed the beginnings of more extensive butterfly surveys, some of which began to gnaw farther into outback Australia. Species encounters continued to rise at a linear rate (Fig. 7).

1968 to 1995 (The Common and Waterhouse era)

The publication of several colour-plated popular works from the late 1960s flourished a lay interest in Australian butterflies. Enthusiasm saw intensified amateur 'series collecting' (De Baar 1993) and an extraordinary rise in records followed. Most yearly tallies had then risen above 2000 p.a. (Fig. 6), with two precipitous peaks prominent, both having risen steeply from a base at just below 1500 p.a. The intensity of effort also induced an exponential growth of anecdotal field notes and refereed publications (Moulds 1999) which made available many more records that might have been lost other-

wise. Improved vehicular access to remote areas (Moulds 1987) eased collectors' annual exposure to the resident fauna. The numbers of species encountered thus maintained its linear increase (which had continued uninterrupted since 1920) (Fig. 7). This period of great productivity undergirded the butterfly atlas set, released not long before its closure.

1996 onwards (The Conservation era)

Soon into this era, Moulds (1999: 22) announced that butterfly conservation had taken on "a new and vibrant meaning in recent years." Funded by Australian National Parks and Wildlife Services (ANPWS) a sweeping report on the conservation status of Australian butterflies (Dunn *et al.* 1994) had heralded change. Highlighted was the critical state of many species' and subspecies' bastions – repercussions of the staggering loss of native habitat across Australia over that century. Its disturbing evidence drove collectors from their classic haunts as state bodies swiftly listed many sought-after taxa for legal protection. Forgotten though was the inconvenient truth that amateurs had actually discovered most of the known sites for these rarest taxa – in fact, about 80% of all Australian butterflies held in museums had been amateur-collected (Moulds 1999). Essentially, the ongoing and irreplaceable input of these dedicated workers had now come under threat (De Baar 1995). Their contribution as well, to the large volume of knowledge on butterflies in this country during the 20th century – estimated at about 95% (Dunn *et al.* 1994) or possibly higher in the opinion of E. D. Edwards (cited by De Baar 1995) – seemed of little consequence to policy makers. The quick-fix solution – blanket protection that included even some inadequately known forms and others not known to be in danger (De Baar 1995) – made for a disheartening experience among collectors (Greenslade 1999). It added to the growing negative image of butterfly collecting in the mind of the populace, inferential then that this was yet another form of wasteful hunting and, as such, an unacceptable threat to the environment (De Baar 1993). The *Butterfly Action Plan* (Sands & New 2002) tried, by repeated emphasis, to uphold their artful role of discovery. It was argued that most collectors were responsible enthusiasts who, by their *ad hoc* fact gathering, served to inform conservation management, not undermine it.

These were turbulent times and a wavering in the tallies of records at about 1000 p.a., marked by steep declines and sharp peaks of brief duration (Fig. 6), now suggest intermittency of effort since the new era of restraint began. Species counts have been down and presently average only 200 p.a., a level first reached in the 1950s (Fig. 7). Since the 1970s peaks had risen from a baseline of over 250 species p.a. but now arise from below 150 – a decline of about 40% – and inferential of a downturn in overall coverage of fieldwork. The law of diminishing returns suggests that the real decline has been even greater. Obviously the more widespread species (the baseline fauna) will be encountered with least effort in the field, but the remainder often requires much determined searching. Pragmatists might argue that these fluctuations could be an artefact of insufficient time to maximise holdings, however the original figure showed no parallel trend in its final years of accumulations (Dunn & Dunn 1990).

Closing Thoughts

The dwindling of pristine habitats with collateral loss of some of their resident butterfly populations (Orr & Kitching 2010) is now well known. The effects of legislative changes and increased reservation of habitat (meaning that, thereafter, 'take' requires a permit – one that may be difficult to obtain) are now realised. This has likely dampened the enthusiasm of some amateurs to seek out desired species and lessened the motivation of others to undertake more general surveys (Dunn 2009). It also seems that changes in public attitude (De Baar 1993), coupled with nuances of legal suspicion (Monteith 1980, New 1984, Sands 1999), "has socially and controversially modified the ethics of collecting" (Dunn & Dunn 2006: 820). While the collecting bubble may well have burst, its aftermath has brought field observations, release of unharmed adults (where physical inspections are needed), and colour photography into broader favour (Braby 1999, Dunn 2003, 2009, Dunn & Franklin 2010). With the well being of the fauna in mind, the use of these mixed methods has gained increasing acceptance in modern publications and scientific reports to substantiate field encounters. This practice, aided by a suitable field guide, should be sufficient to identify about 98% of all butterflies found in Australia (Orr & Kitching 2010).

The question arises today: 'Will the increased use of photography as the main alternative for vouchers enthuse amateurs to continue their expensive fact-gathering expeditions, supply records to databases such as this private one, and in process, advance knowledge on the Australian butterfly fauna?'

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On 2-5 October 2011 Elsevier will be hosting the 6th International Symposium on Molecular Insect Science in Amsterdam, The Netherlands.

The event's website is http://www.molecularinsectscience.com/

Amphiclasta lygaea – an uncommon moth from South-eastern Australia

Stephen Williams

Keywords: moth, ennominae, *amphiclasta lygaea*, Victoria.

INTRODUCTION

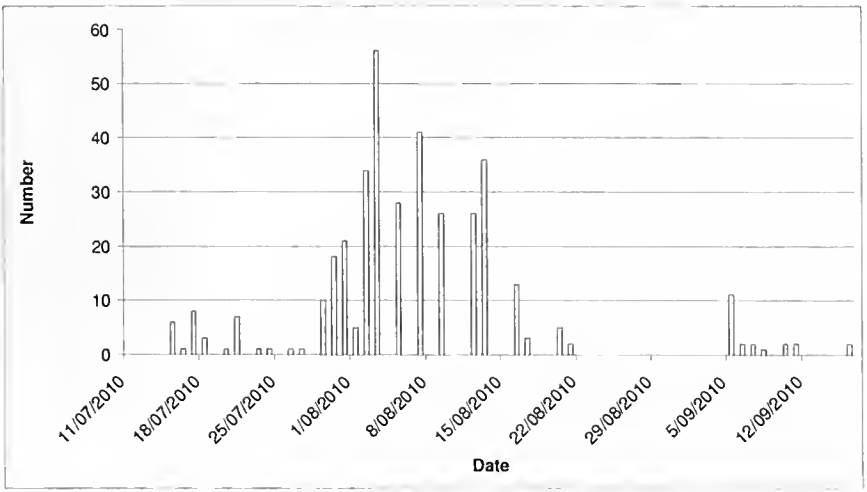
The moth species *Amphiclasta lygaea*, Turner, 1906 is restricted to south-eastern Australia (Common 1993). There are only eight specimens in the collection of the Museum Victoria and there is little published information on its biology and life cycle. The adults are active in winter and early spring. I have observed them at Eppalock in central Victoria for a number of seasons but had not studied them in detail until this year. A strong halogen light was set up on almost all nights from early February 2010 and observations on all species of moths lured to the light have been recorded since July. During July and August 2010 large numbers of this moth were attracted to the light. A number of moths were captured and eventually induced to lay eggs. These subsequently hatched. The early growth and behaviour of the larvae and the numbers, seasonal occurrence and behaviour patterns of the adults are reported here.

OBSERVATIONS OF ADULTS

Behaviour at lights

Figure 1 indicates the number of *A. lygaea* presenting each night at an external light at Eppalock in mid July to mid September. The light was in operation generally between dusk and mid-night. There were some gaps in recording and some nights when no moths appeared, probably because of inclement weather.

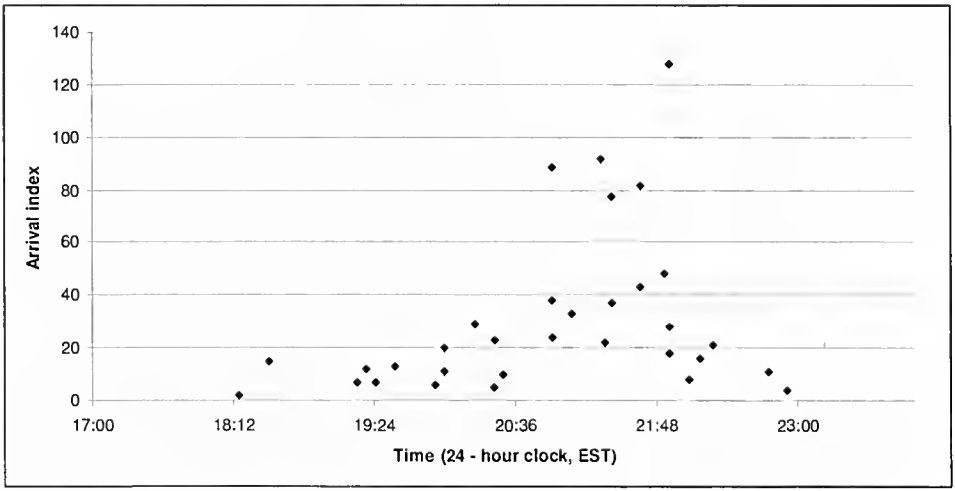
Figure 1: Numbers of *A. lygaea* at a light at Eppalock, July-September 2010



The first records for the year were in mid July and the moths continue to be seen at the time of writing (October 2010), albeit in smaller numbers. During the first two weeks in August *A. lygaea* was the most numerous moth species attracted to the light. The highest count was 56 on the 3rd of August. On arrival the moths vibrated their wings and fluttered but eventually settled. They were then unlikely to move again while the light was on. Thus they accumulated around the light. Figure 2 shows an index of the rate of arrival at the light adjusted to the total number of *A. lygaea* that arrived on the night. As counts could not always be made at the same time or time interval the index

is calculated by dividing the difference in moth numbers between counts by the total at the end of the night and multiplying by 100 to get a percentage change. Additionally, the time difference between counts (in minutes) is also divided by 60 and then used as a multiplier for the percentage change. This provides a raw index that is adjusted both for sample size and sampling period and allows data from multiple nights to be presented. The median times between the sample intervals were assigned to the calculated indices to produce the graph. The data were collected from July to September but only records during the peak of the flight activity (the first 2 weeks in August) were used. The moths were sometimes among the earliest at the light but they were most active between approximately 9:00 pm and 10:00 pm. No mating behaviour was observed at the light or later in captivity.

Figure 2: Index of arrival rate of *Amphiclasta lygaea* to light source



Egg laying

A number of attempts were required before the moths laid eggs. Initially 14 unsexed moths were placed together for 4 days in a container with some twigs; no eggs were laid. A new set of four females and three males was kept with samples of a range of local plant species. Again no eggs were laid. After several similar attempts nine batches of eggs were laid, all at least 3mm down in the crack between the lid and side of the container. This was taken as an indication that females laid their eggs in protected situations in crevices or under bark. Subsequently the bark of Yellow Box (*Eucalyptus melliodora*) was provided to captive females and examined after several days. Eggs were dispersed singly or two at a time in micro-cracks and under bark flakes at or near the bark surface (see figure 3). Larger and deeper cracks were ignored. Egg laying was not directly observed and always occurred some time between midnight and sunrise.

Egg development

The eggs have a glue-like substance congealed at the base and are adhesive. They are creamy white when laid but then change colour to pink then ruby red and before hatching, almost black (figure 4). In the early phases the colour of the embryonic fluid seems to change from clear to red. Later this is depleted or absorbed and the dark larval body is seen through the largely transparent egg shell. In the second photograph from right in figure 4, globules of red embryonic fluid and the dark grey larval body give the eggs a mottled appearance.

Figure 3: *Amphiclasta lygaea* eggs in micro-cracks of Yellow Box bark

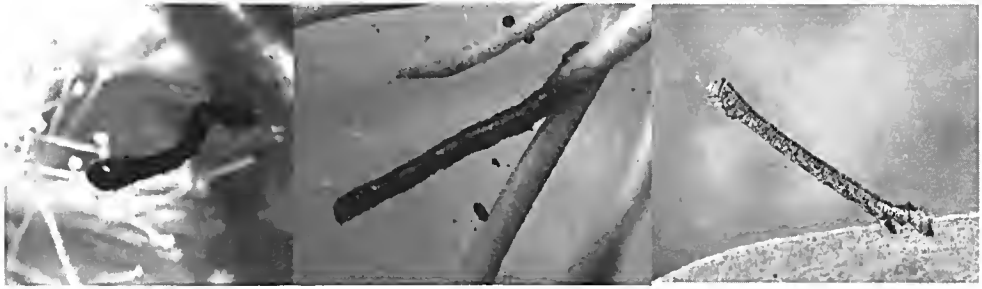
Figure 4: Development of *Amphiclasta lygaea* eggs

Day 1 Day 3 Day 8 Day 15 Day 16

Hatching, larval behavior and rearing

To hatch, the larvae chewed through the side or end of the egg. The larvae were extremely active during the first week or more. They showed strong negative geotropism moving with great alacrity towards the highest point in the container, usually the underside of the lid. Once there they hung from a silk line. These patterns persisted for the first week of life and then over time they developed a more sedentary behaviour and adopted the typical looper stance, emulating a dead twig. Newly hatched larvae were grey-black. When they became more sedentary, they changed to mottled brown, eventually approaching a tan colour (figure 5).

Figure 5: Stages in larval development of *Amphiclasta lygaea* (not to scale)



1 day 15 days 7 weeks

There was no published information on food preferences for the species, and determining suitable host plants proved difficult. Newly hatched larvae were offered small pieces of plants from a range of families local to the Eppalock (Box-Ironbark) region (table 1). During the day they were not seen to feed or favour any particular plant. Close examination of all leaves on all species of plants failed to find evidence of feeding. However the larvae grew slowly and fine frass was observed on the bottom of the container after several days. Eventually a single larva was seen nibbling on the bark of the young shoot from a Grey Box (*Eucalyptus microcarpa*). Subsequently larvae were seen feeding on both Yellow Box and Red Ironbark (*Eucalyptus tricarpa*) shoots and undeveloped leaves (see figure 6) but in the early life stages, never on leaves of any maturity. The species is probably polyphagous but may be restricted to eucalypt hosts.

Figure 6: *Amphiclasta lygaea* larva feeding on Yellow Box shoot

Table 1: Plant species tested as hosts for larvae

Scientific name	Common Name	Result
Acacia acinacea	Gold-dust Wattle	X
Acacia aspera	Rough Wattle	X
Acacia brachybotrya	Grey Mulga	X
Acacia genistifolia	Spreading Wattle	X
Acacia mearnsii	Black Wattle	X
Acacia pycnantha	Golden Wattle	X
Amyema miquelii	Box Mistletoe	X
Brachyloma daphnoides	Daphne Heath	X
Cassinia arcuata	Drooping Cassinia	X
Eucalyptus albens	White Box	X
Eucalyptus camaldulensis	River Red Gum	X
Eucalyptus leucoxylon	Yellow Gum	?
Eucalyptus macrorhyncha	Red Stringybark	?
Eucalyptus melliodora	Yellow Box	YY
Eucalyptus microcarpa	Grey Box	Y
Eucalyptus tricarpa	Red Ironbark	YY
Eutaxia microphylla	Common Eutaxia	X
Geranium solanderi	Austral Cranes-bill	X
Hibbertia exutiacies	Spiky Guinea-flower	X
Hakea decurreus	Bushy Hakea	X
Melaleuca decussata	Totem Poles	X
Ozothamnus obordatus	Grey Everlasting	X
Xerochrysum viscosum	Shiny Everlasting	X

Key: X = Feeding not observed, ? = Possible feeding, Y= Feeding observed, YY = Preference shown

The larvae proved difficult to raise and, after seven weeks, all had perished, the last during a moult. Experience showed that they were prone to fungal infections and would probably benefit from low humidity and well ventilated environs. I am about to raise a new batch of eggs at the time of writing (October 2010).

Figure 7: Adult *Amphiclasta lygaea* at the peak of the flight season

DISCUSSION and CONCLUSIONS

While there are a number of unanswered questions, the results of this study give some insights into the biology and behaviour of *A. lygaea*. The females lay eggs in cracks or under the bark of eucalypts and they probably favour rough-barked species such as Grey Box, Yellow Box and Red Ironbark. It is likely that the eggs are laid on the trunk or major branches where the rough bark occurs. The eggs hatch as the eucalypts put on new growth in late winter and spring and the young larvae probably move upwards to the terminal branches to feed on the youngest bark and shoots. After a month or so, probably at the second or third instar, they change colour so that they resemble dead twigs and begin feeding on young leaves, presumably continuing to align with the seasonal growth pattern of the host plants. It is likely that the larvae are found in the upper canopy at this time, and they may prefer the taller trees. This study gave no information on the timing of pupation, but observations of the adults suggest that they emerge en masse in mid to late winter.

The species occurs locally in large numbers, but it is common only over a limited time. It may be more widespread and numerous in other parts of the state than originally thought. Moderate numbers were recorded in the Brisbane Ranges within a similar time period (15 on 6 August 2010; M. Hewish, pers. comm.). The moths appear to be more common in drier parts of the state. Specimens in collections and observations of live adults came from the Big Desert, Birchip, Bacchus Marsh, the Brisbane Ranges, Werribee Gorge, Warrandyte, Timbertop, Tooborac State Forest and Kangaroo Ground (Museum Victoria specimen data; Australian National Insect Collection specimen data; M. Hewish, F. Douglas, pers. comm). The distribution may be influenced by the range of the host plants and the species' intolerance of damp conditions. This may be one species that is favoured by climate change.

In future, other potential host plants will be tested, particularly Red Box (*Eucalyptus polyanthemos*),

another locally common rough-barked gum. Optimal conditions for growth of the larva are not yet known and I will continue to study this interesting and attractive moth in future seasons.

Acknowledgements

In particular I wish to thank Peter Marriott for his help and encouragement. Marilyn Hewish also deserves a big thank you for editing the article and providing invaluable advice and her own information on the species. Finally I thank the Museum Victoria, the Australian National Insect Collection (CSIRO Ecosystem Sciences, Canberra) and Fabian Douglas for information on distribution.

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Arturs Neboiss was an active member of this Society and the Council for 27 years, from 14 March 1961, when a meeting was convened by J.C. Le Souef at which it was decided to reconstitute the Entomological Society of Victoria, until at least 1988.

Arturs Neboiss

30.11.1924 - 11.6.2010

Arturs was born in Rîga, Latvia on the 30th of November 1924, the only child of Jânis and Matilde Neboiss. His father worked in the Stock Exchange of Rîga. During the winter the family lived in Rîga and Arturs attended school. Summers were spent at the family's property in Ogre .

Arturs interest in nature was awakened by his teacher in nature studies in the first year in high school who suggested to the class, as they were breaking up for the summer holidays, that each student should spend some time during the summer collecting some natural objects to discuss in the next term. Whilst enjoying his holidays, Arturs noticed a number of interesting butterflies about. He started collecting them and, by the end of the holidays, had some 30 specimens stuck on cardboard. The teacher was so impressed that she arranged for Arturs to meet an entomologist who was able to teach him some of the basic principles of entomology.

At the start of the Second World War, Arturs, like many Latvians, found refuge in the West. After the war, he completed his undergraduate and masters studies at the Baltic University in Hamburg, Germany working on lizards. He worked at the university as a laboratory assistant and as a draftsman in the Institute of Geophysics.

In 1947, whilst in Hamburg, Arturs married Aina Vçrmane. They could not return to Latvia, which was occupied by the Russian Communists, and there was little future for the family in war ravaged Germany, so they decided to immigrate and arrived in Melbourne, Australia in 1950. Their daughter Ilze was born in 1955.

Arturs initially worked as a caretaker at St Catherine's Girls Grammar in Toorak before moving to the Bureau of Mineral Resources as a cartographic draftsman.

In 1952 he began his career in sciences when he was appointed to the position of Assistant Research Officer in the Department of Crown Lands and Survey investigating blood -sucking insects (mosquitos, flies and fleas) as vectors of myxomatosis. During this time he forged a working relationship with both the Director (Mr Pescott) and the Curator of Entomology (Mr Alec Burns) at the National Museum of Victoria. He was appointed the Assistant Curator of Entomology in January 1954, after the retirement of Mr Charles Oke.

In 1956, he was awarded his second masters degree by the University of Melbourne for his work on myxomatosis and click beetles (Elateridae). After Alec Burns retired in 1964, Arturs was appointed Curator of Entomology.

In 1965 and 1966 Arturs was a member of scientific expeditions to the South West corner of Tasmania, in an area around Lake Pedder. This part of Tasmania has been shielded by mountain ranges and is home to several unique insect species. Arturs collected more than 3000 specimens.

In 1969 Arturs and Aina divorced. Arturs married Austra Kants in 1970, adopting her 3 children.

In 1954, Arturs was accepted as a Fellow of the Royal Entomological Society, London. His research in entomology received worldwide recognition. He attended many International Symposia on Entomology, Plecoptera and Trichoptera in Moscow, Sweden, Canberra and Austria. He was awarded visiting scientist status at institutions such as the Museum of Comparative Zoology, Harvard University, USA, the Max Planck Institute, Germany and the Zoological Institute, Leningrad.

His work on Trichoptera won him international recognition as an authority on the classification of aquatic insects. He was an invited speaker at numerous International Symposia on aquatic insects and was selected in 1974 as the Australia - New Zealand representative to the International Committee of Trichopterists at Linz, Austria. He was re-elected in 1977 at Reading, UK and again in 1980 at Perugia, Italy.

In 1976 he was awarded his PhD from Monash University, Melbourne for his thesis on the Taxonomy and Zoogeography of Tasmanian Caddis-flies (Trichoptera).

Arturs retired from the Museum in 1989 but continued his work on caddisflies.

By 1991, he had published 85 papers on Elateridae and Cupedidae (Coleoptera), Acroceridae and Syrphidae (Diptera), Plecoptera and Trichoptera (the majority) including 42 genera and 325 species of insects. Five insect genera and 42 species have been named after him. A major achievement was the 1986 publication of his "Atlas of Trichoptera of the SW Pacific - Austalian Region", a key reference for Australasian species. Another was his encouragement of a small group of Australian entomologists to work on Trichoptera. Due to Arturs' work, the Museum Victoria Trichoptera collection is the largest and most comprehensive in the Southern Hemisphere, attracting specimen donations, loan requests and visiting scientists from all over the world

His main hobbies were photography and stamp collecting. For many years he was an active member of the Latvian Photo Club in Melbourne. He made a short film on insects for presentation at a conference in Portugal that was awarded the first prize - a large silver cup.

As his health began to fail, he and Austra moved into the Latvian Village in Melbourne in 2009. He passed away on the 11th of June 2010 and is survived by his wife Austra, daughter Ilze, granddaughters Larissa and Natly and stepchildren Arnis, Brigita and Ivars and their families.

Catriona McPhee Dr Ken Walker Dr Alice Wells

Nov 2010

White background photography

- John Tiddy

The technique used to photograph the wasp on the cover of Victorian Entomologist is not new but is one that has been used by various photographers over many years. I first used it many years ago to photograph onions and capsicums in a simulated pickle jar.

Scottish nature photographer Niall Benvie has taken the technique to higher levels using it in the field rather than the studio and naming it the outdoor studio. It was an article written by Benvie that inspired me to revisit the technique.

At its most basic it is a backlit piece of white perspex with a front/side lit subject.

The aim is to get the perspex that is behind the subject to be pure white. That is, on your Photoshop histogram, a value of 255. To achieve this you will need a flash that fires at the perspex from behind. Ideally this will be a manual or adjustable flash. Set your digital camera so that the highlight alert is active. This means that the area blinking is effectively overexposed and will hold no detail. If the background is not blinking either increase the size of your aperture (smaller number) or increase the output from the rear flash or increase your cameras ISO setting.

Once you have the background exposure correct then turn on your front flash and get the exposure correct for the subject by adjusting that flash.

When you are photographing insects, use something other than the insect to get your set up lighting correct. There are two reasons for this. Firstly many insects do not sit still for long and thus you have not much time to adjust your set up. Secondly you really do not want to stress the insect any more than is absolutely necessary.

I use diffusion for the front flash in order to soften the light and to give more of a wrap of light around the subject. The front light can alternatively be bounced off a white piece of cardboard.

I initially used the technique for flowers and although they shake in the wind they do not walk away on you.

Insects are a different kettle of fish. Firstly they walk or fly. Secondly some insects are better photographed from above and some from side on. For example a grass hopper generally makes a better picture photographed from side on. A beetle however tends to look better photographed from above. The problem is with all of this is that the backlight has to be effectively beneath the subject. If you sit the subject directly on the perspex the light tends to burn out detail in feet and fine detail. Thus you need a piece of clear plastic or glass to

sit the insect on that is above the light source and can create some distance.

With flowers they can be taken exactly where they are. Insects must be captured and placed in your set.

The wasp was photographed on a very cold August day. I found it at the front door of our local M10 store and brought it home. Because of the cold day it was very inactive. I set up the mini studio inside and managed a few shots before it warmed up and was impossible to shoot. Denis Crawford an entomologist friend advised me that the elevated abdomen is an indicator that the insect was very cold. This was confirmed because as the wasp warmed inside our house its abdomen lowered and it became more active.

The image of a scorpion fly was able to be taken outside in situ. The grasshopper however had to be placed on the clear piece of perspex.

Basic requirements: Camera with macro lens.

Two flashes - can be old manual flashes.
Remote trigger or slave system for flashes.
White perspex - for background
Glass or clear Perspex to sit insect on.

You will need to work out some way of supporting all these things. It can be quite primitive for a trial of the system. If you like the result then a series of clamps and tripods to hold flashes and backgrounds will make the job easier.

Niall Benvie has a book and a DVD out that explains the technique far better than I can.

The book can be found on http://www.outdoorphotographytraining.com/7.html

Editor's note: We hope to include more of John's insect photo in a future colour issue.

Scientists from the Western Australian Museum have discovered an undescribed species of solitary bee

This remarkable solitary bee , nicknamed Megamouth, is similar in size to *Apis mellifera*. The males have been observed in unusual burrow guarding behaviour.

For further information:
http://www.museum.wa.gov.au/about/latest-news/new-bee-species-discovered-forrestdale

Also an information sheet from the museum will be made available to members by email.

New bee species found in Forrestdale (to be named) © courtesy of the Western Australian Museum.

The Le Souëf Memorial Award

Ian Endersby
56 Looker Road, Montmorency, Vic 3094

The Le Souëf Memorial Award was inaugurated in 1982 and has been presented 13 times.

John Cecil Le Souëf was born in a sleepout at the Melbourne Zoo, on 5 November 1905 and received the nickname 'Zoo' while at kindergarten. His father W.H. Dudley and his grandfather Albert A.C. Le Souëf had been directors of the Melbourne Zoological Gardens, while two uncles, Albert Sherbourne and Ernest Albert Le Souëf, had directed the Sydney and Perth Zoological Gardens respectively. Details of his entomological achievements can be found in his obituary [12:46] and at http://www.austehc.unimelb.edu.au/guides/leso/006.htm [accessed 2 Nov 2010]. One of his greatest contributions was to re-establish the Entomological Society in Victoria in 1961, after a lapse of 20 years. After his death his collection of 15,000 insects (including 9,500 lepidoptera and 4,500 coleoptera) was donated to the Australian National Insect Collection.

'Zoo' Le Souëf passed away on 21 June 1982 and, at the meeting of the Society in August, the President advised members that plans for a memorial were under consideration by Council [12:36, 48]. A Memorial Fund was launched in the October Newsletter, and the purpose of the fund was to make an award (probably annually) to an amateur or younger enthusiast [12:51]. By the time of the Council meeting in March 1983 guidelines had been drafted and they had narrowed the potential recipients to an amateur entomologist in Australia of any age, and it could be made at unspecified intervals. The guidelines imply that nominations would come informally from Society members [13:19]. At the next general meeting (April 1983) members ratified the guidelines after they had been changed to require nominations in writing, restricting the frequency to no more than once a year, and requiring the recipient to provide an article for the newsletter on his or her entomological experiences [13:20-21].

A painting, donated by Andrew Atkins, was to be raffled amongst members to augment the Fund. It depicted a pair of the lycaenid *Virachola smilis daleyensis* Le Souëf & Tindale (now in the genus *Deudorix*). By an interesting coincidence, the raffle was won by Nick, son of 'Zoo' Le Souëf [14:3]. At the end of 1983 the Memorial Fund comprised almost $1,150.

The inaugural winner of the Le Souëf Memorial Award was Keith Hateley, a life member of the Society. Mary Le Souëf, wife of 'Zoo', made the presentation at the AGM of the Society in June 1984 [14:35]. Subsequent winners were:

1983	Keith Hateley	Vic	13:35
1984	Geoff. A. Williams	NSW	15:2
1985	Max Moulds	NSW	16:2
1986	Andrew Atkins	Vic	16:69
1987	Bert Brunet	NSW	17:100
1988	Robert H. Fisher	SA	19:3
1989	Gunther Theischinger	NSW	19:98
1990	Deniss Reeves	Qld	20:6
1993	Peter Kelly	Vic	23:20
1996	Bob Hay	WA	27:5
1998	Bert Brunet	NSW	29:3
1999	Hugh Bollam	WA	30:15
2006	Peter McMillan	WA	37:27

A further refining of the Rules [14:33] allowed that nominations would stand for three years but the award could not be received by the same person more than once in a 10 year period. Appropriate contributions were defined and guidance given on the format of the nomination. No longer was there a requirement for an article from the winner.

Andrew Atkins, the 1986 winner, expressed the wish that the financial equivalent of his award be used to encourage junior entomologists [17:100] so the amount was added to the Junior Encouragement Fund. That Fund had been established with a $100 anonymous donation only a few months earlier [17:58] with a separate bank account to manage it [17:99]. Various proposals were made for ways in which to encourage juniors such as the provision of display cases, literature and equipment for schools [19:90], and essay and poster competitions [20: 124]. The scope of an essay competition was published in August 1991 [21:111-112] and two entires were received [21: 119]. No record of the winning essay or its author can be found in the *Victorian Entomologist*. Because of the difficulties in attracting entries for the Junior Encouragement Award it was considered that funding a bursary for the STAV Science Talent Search would be an appropriate alternative. That this was plausible was demonstrated by the list of 1990 bursary winners which included eight projects with entomological themes [22:104].

To avoid excessive bank charges the Le Souëf Award and the Junior Encouragement Award accounts were amalgamated [25:41] in 1995.

Discussion

The Le Souëf Memorial Award is probably the best known medium in the Australian entomological scene for offering encouragement to an amateur entomologist, and yet it has only been awarded 13 times in 28 years. Each year invitations for submissions are sent to all of the entomological and insect study societies in Australia, the field naturalist clubs in each capital city and the Royal Societies of each state. From the geographical spread it can be seen that, from time to time, certain societies have taken the opportunity to honour a number of their members.

The Committee has buffered the Council and members from disappointed nominators and nominees, and no records are kept of the Committee's deliberations.

Because the Fund has been deliberately grown over the last few years by allocating interest from the Society's term deposits to it, and because not many calls have been made on it for awards recently, it stands at about $5,500. This can generate sufficient income to fund a STS bursary of about $70 and a Le Souëf Award of about $250 each year. However, this high balance, coupled with the apparent lack of interest from nominees, has produced the occasional suggestion that the funds could be better used for other purposes. The most recent of these was a call for additional colour photographs in the newsletter.

Without the Le Souëf Award there is no way for the Entomological Society of Victoria, and most other Australian entomological societies, to promote and honour amateur entomologists. The Society's web page www.entsocvic.org contains details of the award and this wider exposure might produce new nominations.

References. All references are from the *Victorian Entomologist* abbreviated to volume and page.

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CONTENTS

DIARY OF COMING EVENTS

February 15, 2011 Members Excursion
Melbourne Museum Back of House Tour
This meeting is being kindly hosted by Jessie Sinclair who will introduce us to the area where the insects and spiders are bred, raised and cared for in preparation for the Museum's live exhibits.
Meeting at the normal venue –
The Discovery Centre, Melbourne Museum.@ 20:00 sharp

Tuesday March 15

Council Meeting

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